IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A method of material processing, the method comprising:

characterizing a process, said characterizing comprising measuring a process performance parameter at a plurality of positions on a sample to obtain measurement data and transforming the measurement data into at least one spatial component in spectral space to identify a measured signature of said process, wherein said measured signature comprises the at least one spatial component in spectral space;

optimizing said process, said optimizing comprising identifying a reference signature of said process; and

comparing said measured signature of said process with said reference signature for said process, wherein said comparing comprises determining a difference signature representing a difference between the measured signature and reference signature, and determining a process fault by comparing said difference signature with a threshold, wherein said process fault occurs when said threshold is exceeded; and

identifying whether a process variation is global or local based on the signature of spatial components.

Claim 2 (Previously Presented): The method according to Claim 1, further comprising performing said process on a substrate.

Claim 3 (Original): The method according to Claim 2, wherein said substrate is at least one of a wafer or a liquid crystal display.

Claim 4 (Previously Presented): The method according to Claim 1, wherein said process performance parameter is at least one of etch rate, deposition rate, etch selectivity, etch feature anisotropy, etch feature critical dimension, film property, plasma density, ion energy, concentration of chemical specie, temperature, pressure, mask film thickness, and mask pattern critical dimension.

Claim 5 (Previously Presented): The method according to Claim 1, wherein said transforming comprises applying a discrete Fourier transform to the measured data to provide said at least one spatial component as Fourier harmonics.

Claim 6 (Currently Amended): The method according to Claim 1, wherein said characterizing further comprises determining a relationship between said measured signature and at least one controllable process parameter associated with the measured ~~signal~~ signature, using a multivariate analysis.

Claim 7 (Original): The method according to Claim 6, wherein said multivariate analysis comprises principal components analysis.

Claim 8 (Original): The method according to Claim 6, wherein said multivariate analysis comprises design of experiment.

Claim 9 (Previously Presented): The method according to Claim 6, wherein said at least one controllable process parameter comprises at least one of process pressure, RF power, gas flow rate, cooling gas pressure, focus ring, electrode spacing, temperature, film material viscosity, film material surface tension, exposure intensity, and depth of focus.

Claim 10 (Previously Presented): The method according to Claim 1, wherein said optimizing comprises improving spatial uniformity of said measurement data.

Claim 11 (Previously Presented): The method according to Claim 1, wherein said optimizing comprises minimizing said at least one spatial component in spectral space.

Claim 12 (Previously Presented): The method according to Claim 1, wherein said measuring comprises obtaining a multi-dimensional scan of data for said process performance parameter.

Claim 13 (Previously Presented): The method according to Claim 12, wherein said multi-dimensional scan of data is a two- dimensional scan of data for said process performance parameter.

Claim 14 (Currently Amended): A system for material processing, the system comprising:

process chamber,

device configured to measure and adjust at least one controllable process parameter,

device configured to measure at least one process performance parameter, and

controller capable of characterizing a process, said characterizing comprising:

measuring a process performance parameter at a plurality of positions on a sample to obtain measurement data and transforming the measurement data into at least one spatial component in spectral space to identify a measured signature of said

process, wherein said measured signature comprises the at least one spatial component in spectral space;

optimizing said process, said optimizing comprising identifying a reference signature of said process;

comparing said measured signature of said process with said reference signature for said process, wherein said comparing comprises determining a difference signature representing a difference between the measured signature and reference signature; and

determining a process fault by comparing said difference signature with a threshold, wherein said process fault occurs when said threshold is exceeded; and

identifying whether a process variation is global or local based on the signature of spatial components.

Claim 15 (Original): The system according to Claim 14, wherein said process chamber is an etch chamber.

Claim 16 (Original): The system according to Claim 14, wherein said process chamber is a deposition chamber comprising at least one of chemical vapor deposition and physical vapor deposition.

Claim 17 (Original): The system according to Claim 14, wherein said process chamber is a photoresist coating chamber.

Claim 18 (Original): The system according to Claim 14, wherein said process chamber is a dielectric coating chamber comprising at least one of a spin-on-glass system and a spin-on-dielectric system.

Claim 19 (Original): The system according to Claim 14, wherein said process chamber is a photoresist patterning chamber.

Claim 20 (Original): The system according to Claim 19, wherein said photoresist patterning chamber is an ultraviolet lithography system.

Claim 21 (Original): The system according to Claim 14, wherein said process chamber is a rapid thermal processing chamber.

Claim 22 (Original): The system according to Claim 14, wherein said process chamber is a batch diffusion furnace.

Claims 23-24 (Cancelled).